

## **WHAT IS CLAIMED IS:**

1. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle, said system comprising:
  - a visual display;
  - means including a GPS receiver for providing data indicative of a position of a aircraft, the altitude of the aircraft and the course of the aircraft;
  - a computer for providing a moving map data indicative of a topography of an area surrounding the position of the aircraft;
  - means including said computer for determining a flight hazard zone within a first preselected distance from the aircraft and based on the altitude of the aircraft and for generating a first color display of the first hazard zone based on the moving map data;
  - means including said computer system for detecting a more dangerous zone within a second preselected distance from the aircraft which is less than the first preselected distance from the aircraft and based on the course and altitude of the aircraft and for generating a second color display of the more dangerous hazardous zone based on the moving map data to warn a pilot of the more dangerous zone;
  - means for detecting a physical obstacle within a third preselected distance from the aircraft which is less than said first preselected distance from the aircraft; and
  - means for producing a series of audible clicks when said aircraft is within said third preselected distance from the physical obstacle and for increasing the frequency of the series of clicks as the aircraft approaches the physical obstacle.
2. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle according to claim 1 which includes means for increasing the volume of the audible clicks as the aircraft approaches the physical object.
3. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle according to claim 2 which includes mute means for muting the series of clicks.

4. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle according to claim 3 which includes means for overriding said mute means as the aircraft draws near to the obstacle.

5. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle according to claim 4 which includes an additional detection means for detecting a dangerous obstacle within a preselected distance from the aircraft and for generating a signal indicative of a dangerous obstacle and when said aircraft is within a preselected distance from the physical obstacle and for increasing the frequency of the series of clicks as the aircraft approaches the physical obstacle in response to either the first means of detecting a physical obstacle or the additional detection means.

6. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle according to claim 5 in which said additional detection means is a low frequency radio receiver and antenna for detecting an AC signal of about 50 to 60 hertz.

7. In an airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle of the type having:

- a visual display;

- sensors for providing data indicative of an altitude of the aircraft, a course of the aircraft and a position of the aircraft;

- a computer for providing a moving map data indicative of topography of an area surrounding the position of the aircraft;

- means including said computer for determining a first hazard zone within a first preselected area based on the course and altitude of the aircraft and for generating a display of hazards within the hazard zone based on the moving map data;

- means including said computer for detecting a proximate hazard from among the hazards within the hazard zone at a predetermined distance from the aircraft; and

- altering means for creating a visual change in appearance of proximate hazards in contrast to other hazards;

the improvement comprising audio means for producing a series of clicks and means for increasing the frequency of the series of clicks as the aircraft approaches the proximate hazard.

8. In an airborne obstacle detector and warning system according to claim 7 wherein the improvement further comprises muting means for muting the audio signal.

9. In an airborne obstacle detector and warning system according to claim 8 wherein the improvement further comprises means for overriding the mute means when the distance between the aircraft and the proximate hazard decreases.

10. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle, said system comprising:

- a visual display;

- sensors for providing data indicative of an altitude of an aircraft, a course of an aircraft and a position of the aircraft;

- a computer for providing a moving map data indicative of a topography of an area surrounding the position of the aircraft;

- means including said computer for determining a hazard zone based on the course and altitude of the aircraft and for generating a display of hazards within the hazard zone based on the moving map data;

- means including said computer system for detecting a proximate hazard from among the hazards within the hazard zone at a predetermined distance from the aircraft;

- altering means for creating a visual change in appearance of a proximate hazard in contrast to others of the hazards; and

- audio means for producing a series of clicks and for increasing the frequency of the series of clicks as the aircraft approaches the proximate hazard.

11. An airborne obstacle detector and warning system for alerting a pilot of a rotary wing aircraft of the proximity of a physical obstacle, said system comprising:

- a visual display;

means including a GPS receiver for providing data indicative of an altitude of an aircraft, a position of the aircraft and a course of the aircraft;

a computer for providing a moving map data indicative of a topography of an area surrounding the position of the aircraft;

means including said computer for determining a first hazard zone within a first preselected distance from the aircraft based on the altitude of the aircraft and for generating a first color display of the first hazard zone based on the moving map data;

means including said computer for detecting a more dangerous zone within a second preselected distance from the aircraft which is less than the first preselected distance and for generating a second color display of the more dangerous hazard zone based on the moving map display to warn a pilot of the more dangerous zone;

means for detecting a physical obstacle within the second of said zones and within a preselected distance from the aircraft which is less than the distance of said first zone; and

means for producing a series of clicks when said aircraft is within a preselected distance from the physical obstacle and for increasing the frequency of the series of clicks as the aircraft approaches the physical obstacle.